

A Report on the Gecko *Teratolepis fasciata* (Blyth, 1853)

BY

JER. AND. ANDERSON

Collector and Field Associate, Royal Scottish Museum, Edinburgh¹

(With two plates, one map, and three text-figures)

INTRODUCTION

Very few records exist of the occurrence of *Teratolepis fasciata* (Blyth, 1853) since Smith's comprehensive report on the species in Vol. II of FAUNA OF BRITISH INDIA, REPTILES. Between 1952 and 1962, 12 specimens were collected in lower Sind by M. G. Konieczny for Prof. Robert Mertens of the Senkenburg Museum. The Karachi Zoo obtained three specimens from a local collector in 1953-54 and Dr. Sherman Minton Jr., of the American Museum of Natural History, obtained a female from Thatta in June 1961 which laid 2 eggs in the terrarium (the eggs subsequently hatched). He obtained a second adult from Mirpur Sakro the following year.

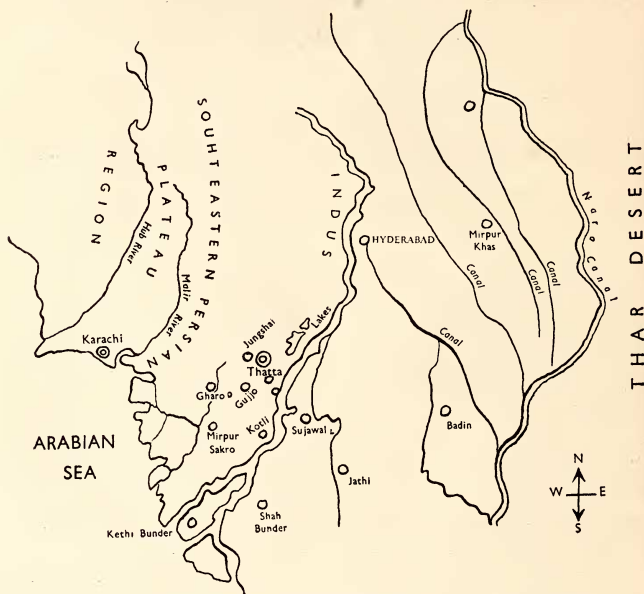
Between 1 December 1961 and 1 May 1962 intensive collection of this species was organized by the author in the Indus Delta flood plain particularly at Thatta, Pir Patho, Gora Bari, Sujawal, Jathi, Badin, Shah Bunder, and Mirpur Sakro. Collecting was mainly at night and about 200 specimens were caught of which approximately 70% were adult males. The percentage of specimens with regenerated tails was: Thatta (c. 80%), Pir Patho (50%), Jathi, Badin, and Mirpur Sakro (20%). The results provide adequate evidence that the species is not uncommon, though patchily distributed in the Indus Delta plain. These areas of abundance are referred to as Colony Sites in this report.

RANGE

The Indus Delta plain (Sind: West Pakistan) from the eastern limits of the lower Persian plateau region to the western perimeters

¹ Present address: c/o The French Military Attache's Office, 20/E Drigh Road, Pechs, Karachi 29, W. Pakistan

of the Thar desert, at sea-level more or less; bounded in the south by the coastline; limits north of latitude 25° not recorded. Records



Sketch Map of the Indus Delta Plain

of occurrences beyond these limits require substantiation. It is likely, however, that the species occurs on or around delta plains of the Ganges and other Indian rivers.

COLLECTION SITE : RAJ MALK, DISTRICT THATTA,
AREA MIRPUR SAKRO, DECEMBER 1961

The site of collection is an 18th century burial ground covering about 5 acres, situated at the western edge of the Indus Delta area between the villages of Gharo and Mirpur Sakro and about 6 miles from the coastal marsh along Gharo creek. The terrain is flat with an average elevation of less than 10 ft. above sea-level. The soil is loose grey sand and silt. The area is affected by salinity. The dominant vegetation is desert scrub, particularly *Salsola foetida* and

grasses. Two shallow lakes lie alongside the site. The graves are overgrown and dilapidated. Loose bricks measuring about 200 mm. square and 30 mm. thick lie scattered all over the ground intermixed with larger stone slabs dislodged from the graves. A 5-ft. brick wall, also dilapidated and wind-worn, surrounds two large mosques in the centre of the site: the square thus formed is about 800 sq. yards. A village of about 25 huts with an over-all population of 100 lies on the side of the site and a regularly used cart road winds through it. A programme of mechanized cultivation is under way all around the site.

Holes of small gerbilles are numerous and the terrain around the walled-in square is uneven and colonized by the brush-tailed *Meriones hurrianae*. Other mammals identified are hare, jackal, mongoose, fox, porcupine, hedgehog, and shrew. Birds are numerous and include hawks, shrikes, owlets, crows, rollers, mynas, and babblers, among the possible predators. Other reptiles seen or collected at or near Raj Malk include, *Hemidactylus brooki*, *persicus*, and *flaviviridis*, *Gymnodactylus kachensis*, *Eublepharis macularius*, *Mabuya macularia*, *Acanthodactylus cantor*, *Calotes versicolor*, *Agama agilis*, *Varanus monitor*, *Psammophis leithi* and *schokari*, *Coluber fasciolatus* and *ventromaculatus*, *Oligodon taeniolatus*, *Spalerosophis diadema*, *Natrix piscator*, *Naja naja*, *Bungarus caeruleus*, *Vipera russelli*, and *Echis carinata*—all relatively common and widely distributed species. Another uncommon species collected at the site is the small Blind-snake *Leptotyphlops blanfordi*, represented by two specimens. The only amphibians immediately associated with the *Teratolepis* are *Bufo andersoni* and *Rana tigrina*.

All the *Teratolepis* collected at this site were found by day beneath cover lying on loose, dry soil. More were found under small bricks than elsewhere. Two of those collected were large adults (body 60 mm., tail 35 and 40 mm.), 6 average-sized adults (average body length 50 mm., tail 25 mm.), and one juvenile (body 28 mm., tail 14 mm.). Excluding the juvenile, the collection consisted of 2 males and 6 females: both the large specimens were females. Two out of the 9 had regenerated tails.

DESCRIPTIVE NOTES

Rostral with median cleft above; 7 to 10 upper and 6 to 8 lower labials. Scales on head roundish, convex, granular and subimbricate on parts. Dorsal scales strongly imbricate, smooth on neck and feebly

keeled on back, graded backwards, smallest on neck and largest on rump. Caudal scales strongly imbricate, leaf-like and large, as wide as diameter of eye, with faint striations. These large scales begin from the constriction at the base, the largest in the middle and the smallest at the tip. Greatest circumference around tail more than greatest circumference around head or body. Tail so constructed as to permit only entire dismembering from constriction at base, never partial. Hence regenerated tails are always entire, never in portions. The regenerated tail is more swollen and quite circular in cross-section, heart-shaped. The imbricate scales are smaller and the original colour and pattern replaced by irregular mottling. Regeneration takes about ninety days under favourable conditions.

Subdigital lamellae: forefoot—7, 8, 9, 9, and 8 lamellae; hindfoot—7, 8, 9, 9, and 7 lamellae. Lamellae pads separate from one another but on common basal plates, most of which are notched, the first and last two or three entire.

Post-anal sacs large and prominent in males, absent in females, and post-anal bones present. Males with six to eight pre-anal pores. Maximum length recorded: head and body 65, tail 40 mm.; average length: head and body 50, tail 31 mm. Males are generally smaller than females.

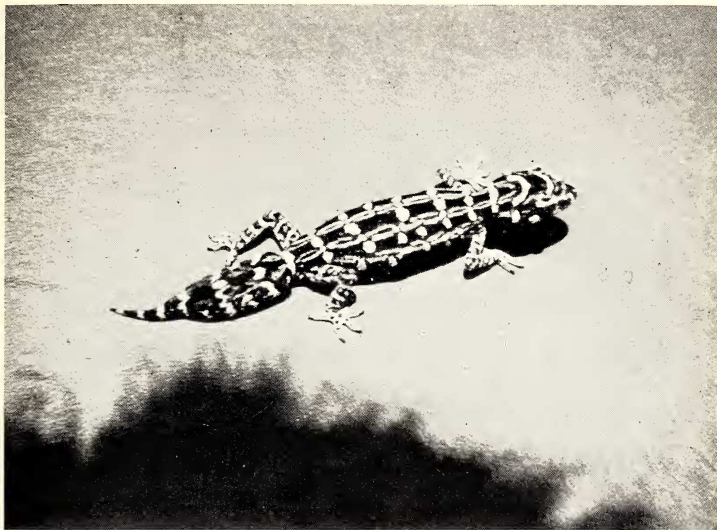
Colour and pattern are regular and constant in all specimens, from newly hatched young to adults. The only recorded variations are in colour shades, which are generally temporary, and in precise shape and extent of white markings. Each scale is of only one colour as a rule and the white spots and bands comprise groups of white scales. Mental with a median dark brown line, corresponding with rostral cleft. Coloration in aged specimens tends to fade and the pattern becomes slightly blemished.

The skin is thick and tough, of velvety quality, and the pattern stands out boldly. Sloughing takes place roughly every 40 days and the shedded slough bears the original colour and markings distinctly, though translucent.

HABITS IN THE FIELD AND IN THE TERRARIUM

When discovered, the geckos immediately curl up with the tail coiled and pressed inwards against the side (Fig. 1). On further disturbing, they depress their bodies, flattening out, head bent tightly against one side, and raise the tail erect and on edge presenting it like a shield towards the assailant (Fig. 2). Still further provocation

Teratolepis fasciata (Blyth)

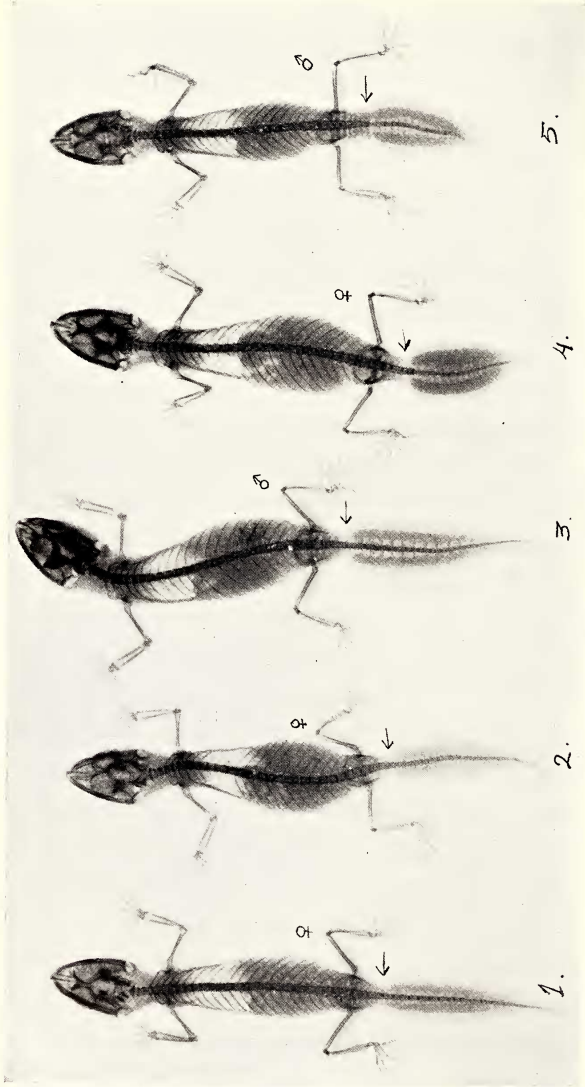


At rest



In defensive posture

Photos : Dr. Sherman A. Minton, Jr.



X-Ray photographs of *Teratolepis fasciata*

Nos. 1 to 3 original and 4 to 5 regenerated tails. Breakage point, between 6th and 7th caudal sections, indicated by arrows. Regenerated tail has highly developed, sectioned cartilage column and original muscular development, which allow regenerated tail when broken the same nervous and muscular reactions as an original tail.

causes the geckos to arch their backs, rise on their legs, twitch their tails in sideward jerks, the top half swaying from side to side, and suddenly strike out at the assailant, with the mouth closed or open, uttering a raspy hiss barely audible to human ears. The tail is held high and directed towards the assailant until the instant of striking when the head shoots forward. The strike and demonstration may be repeated twice or thrice before the gecko scurries away swiftly in spurts for a metre or so at a time. When handled, the geckos coil up tightly, tail bent over on one side and head in towards tail tip (Fig. 3), and this position is relentlessly maintained until such time as the gecko becomes used to handling.

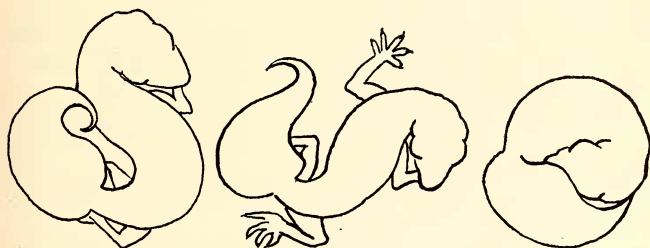


Fig. 1.

Fig. 2.

Fig. 3.

Teratolepis fasciata (Blyth)

Fig. 1. When first discovered; Fig. 2. When further disturbed;
Fig. 3. When handled.

They show no inclination to climb the heavy, rough bark of a large tree or to hide in its available crevices, but will readily climb narrow limbs of bushes and on to the branches and will scale a worn brick wall and make for chinks, holes, and crevices hastily.

They will swim 2 metres of water in about 10 seconds showing a regular style of swimming, turning and twisting the body with the apparent assistance of the tail in a serpentine manner. When walking on a smooth, hard surface, the geckos move very slowly and deliberately, curling each toe up until the nail touches the ankle as they lift their feet. They lick the surface at intervals as they advance.

Teratolepis in terrariums show a tendency towards communal latrine habits, usually depositing all excreta in a specific part of the terrarium.

Excluding the rough tail portion, which is discarded, the shedded slough is eaten by the gecko.

In the terrarium, specimens shovel away sand to gain better entrance beneath a stone or some such object and thus create comfortable forms. Individuals of both sexes have been observed shovelling earth backwards with both fore- and hindfeet, apparently aimlessly while gazing fixedly and blankly or when approaching another specimen, occasionally during breeding, in the manner of dogs. However, at no time have they shown the tendency to actually excavate their own burrows when suitable soil has been provided. When kept among other small burrowing geckos, like *Stenodactylus* and the American *Coleonyx*, which efficiently and promptly made their own burrows, the specimens never entered these burrows not even when the occupant was abroad. Instead they would lie beneath a leaf, behind loose bricks, or high upon the limbs of dry branches or the walls of the terrarium.

Injurious breaks to the skin take a long time to heal and scars are left for life. A wound on the foot of a young specimen took about 90 days to heal during which time sloughing took place on two occasions shedding from around the wound. During this period the specimen increased in length by 5 mm.

In their attempt to escape capture, males will actually turn ferociously upon their assailant, hiss, arch the back, strike out with both mouth and raised, coiled tail, and flee in leaps and bounds actually jumping between 20 and 40 mm. high, covering some 30 to 50 mm. in distance at each leap. The flight is in rapid, short, spurts, the tail being withdrawn into the usual tight coil at each halt. When aggravated and prevented from escaping, they will flip their entire body length sideways, to and fro, in quick jerks, twitching head and tail sideways alternately in co-ordination with each flip, hissing simultaneously. One male specimen bit a probing finger very sharply and held on until it broke the grip, seemingly by twisting the tail over its mouth. Sometimes the caudal scales are slightly raised, individually, in lateral series, or all together to produce perhaps yet another effect. Females are very lethargic and require considerable provocation before any reactions are obtained. Some refuse to react at all.

EXPERIMENTS AND OBSERVATIONS

A young *Coluber ventromaculatus*, a snake known to feed off lizards largely, was introduced into a terrarium containing eight freshly collected *Teratolepis*. Four of the geckos reacted by flatten-

ing head and body to the sand, twitching their tails in the air, in the already described manner, and thrusting it in the direction of the serpent's head. They then struck at the head and scrambled away, still flattened to the sand, twisting and turning in a zigzag manner as they fled. One large gecko struck the serpent's head with open jaws but did no apparent harm. All four lizards turned very pale in general colouring which then tended to blend more with the sand. The remaining four *Teratolepis* in the terrarium, which were comparatively out of the way, merely curled up in their corners. For an hour or so after the experiment these geckos would react in an identical manner when provoked with a finger tip or stick. Introduction of a medium-sized *Eublepharis macularius* fat-tailed gecko (roughly 6 times the size of a *Teratolepis*) into the terrarium a couple of hours later induced similar reactions in the *Teratolepis*. Both the *Coluber* serpent and *Eublepharis* gecko showed signs of fright during the experiment. During the night, some 5 or 6 hours later, five of the specimens were clinging to the wire netting sides of the cage or perched on pieces of wood instead of in their usual position on the floor of the terrarium.

Specimens assumed coiled positions with their upper tail surface facing the entrance like a shield after being left undisturbed for 30 minutes or so in provided form or burrow.

When submerged 200 mm. in water, specimens surfaced apparently calm at approximately 45° angle.

Specimens buried under 100 mm. of loose, soft sand did not attempt to get out until provoked with a stick but remained thus for about 15 minutes and then surfaced easily shovelling the sand backwards.

When introduced to a flat vertical wall surface of uneven and weather-worn bricks, specimens climbed with apparent ease and followed joints to crevices which they entered.

They were able to cling to the lower side of a polished glass surface held at an angle of 60° to the horizontal, and move each foot individually in this position. They held fast to the completely inverted surface of some medium grain cardboard, even when gently shaken.

REPRODUCTION

Courtship takes place between February and June, but tends to continue further and seems to carry on to a lesser degree right through the summer.

The mating call is four, clear, loud and short clucks (as of *Hemidactylus*) followed by a prolonged rolling trill, which lasts for a duration of about five seconds. This is repeated at regular intervals of about 10 seconds for approximately half an hour. The calling may be continued. The responsive female call is similar but of a much lower tone.

The male approaches the female slowly and deliberately, either with body flattened or raised high on its legs, with tail raised erect, gracefully swaying from side to side and twitching at the base. The female responds to the approach similarly but with somewhat reserve. Before attempting copulation, the male licks the head and body of the female several times, whilst cautiously stalking around her, apparently for responsive reactions. Sometimes a female resists and is then run down and overpowered, her neck or head grasped in the jaws of the male who forces her to the ground and compels her to submit.

Often two males will fight savagely over a female and a tail of one or other is sometimes snapped off.

Out of a specially segregated collection of 40 males and 30 females, 27 females laid 135 eggs from March to June and 68 eggs over August until 2nd September. Three adult females remained apparently barren. Eight more eggs were laid by the end of September, after which laying ceased. This made a total of 211 eggs laid from March to the end of September by 27 females. The maximum number laid by a single specimen was 24 and the minimum 2. The eggs were laid in clutches of two. The larger number of eggs were laid by the comparatively larger specimens and the lesser numbers by the smaller, apparently depending on the stage of maturity of the individual. Clutches are laid at intervals of approximately 14 days. The eggs of a clutch are laid one after the other, the interim period extending from 2 to 48 hours roughly. By 1st December 180 young had hatched out in perfectly healthy condition, while 31 eggs were spoiled, apparently not due to infertility. Incubation on the average took between 6 and 8 weeks.

An apparently aged female specimen with regenerated tail (head & body 61 mm., tail 22 mm.) out of the Raj Malk collection (collected 24th December 1961) was kept in a terrarium with 2 males, 1 juvenile, and 5 other females. Gravidity was first noticed on 22 February 1962. The first egg was laid on 5th March and the second on 7th March, behind a wall of loose miniature bricks on the sandy floor of the terrarium (measurements of eggs 9.5 and 10.5 mm. × 8 mm.). The specimen showed considerable concern for her eggs and when they were exposed by the removal of the brick

wall she tried to safeguard them by making every effort to cover them with sand by shovelling backwards with her forefeet. When the eggs were removed to the opposite side of the terrarium, she followed them, licked them several times, and continued her efforts. After the eggs had been placed in a ventilated plastic container (transparent) which was kept on the floor of the terrarium, the specimen made efforts to enter the container for the following two days. It finally resolved itself to coiling up on top of the container and lying there for the next ten days, only leaving it occasionally to relieve herself and feed and drink, before giving up. (The second clutch was laid on 22nd March.)

The first young hatched in the early hours of 4th May and the second on 6th May. They were kept in a container with some *Microgecko* and some newly hatched *Gymnodactylus* and *Hemidactylus*. On introducing the mother specimen she immediately went up to each of her young and licked them several times. She repeated this performance several times, walking about in circles and coming back to them from time to time. When she perceived a young *Gymnodactylus* she promptly grabbed it and devoured it. She did the same with a second and then returned to her young to lick them again.

In the field pairs of eggs have been found in deserted burrows, beneath piles of old bricks, and beneath large embedded stones etc. In the terrarium, with an exception of a few which were laid between and upon bricks, all the eggs were laid upon the floor and covered over loosely with sand. Single or more clutches were laid in the same spot. Specimens showed a tendency to choose and maintain a laying spot.

The eggs are a pure soft-white colour, hard-shelled and fragile, and generally of an oval shape though sometimes perfectly round. Sizes and shapes vary considerably, pairs of a clutch being almost identical usually. The irregularity in egg dimensions of the species is most marked. An example of size irregularity in the eggs of one specimen laid consecutively in one season is as follows: 9.5×8 and 10.5×8 mm., 10×9 and 10×9 mm., 11×8.4 and 11×8.6 mm., 10×9 and 11×9 mm., 11×10 and 11.5×9 mm. A pair of round eggs laid in a clutch measured 8.8×8.8 mm., each. The largest eggs recorded measured 11.5×10 and 11.5×10.5 mm.

Average measurements of newly hatched young: head and body 22 mm., tail 12 mm.